

Alan S. Jones
Assistant Professor of Mechanical Engineering

Education

2003, Ph.D., Mechanical Engineering, University of Michigan, Ann Arbor, Michigan.

1995, M.S., Mechanical Engineering, University of Michigan, Ann Arbor, Michigan.

1994, B.S., Mechanical Engineering, Bradley University, Peoria, Illinois.

Positions and Ranks Held at IUPUI

August 1, 2005 – Present, Assistant Professor of Mechanical Engineering.

Other Related Experience

2003-2005, Post-doctoral Research Associate, University of Illinois, Champaign, Illinois.

1995-1998 Mechanical Engineer, Texas Instruments.

Teaching Interests

Mechanics of Materials, Experimental Mechanics, Manufacturing Processes, Material Science, Engineering Design.

Courses Taught at IUPUI

ME 569 Mechanical Behavior of Materials.

Research Interests

Self-Healing polymers, thermomechanical degradation of elastomers, mechanobiology.

General Summary

Dr. Alan Jones' research interests span the fields of autonomic material systems (self-healing polymers), thermomechanical degradation of elastomers, and mechanobiology. From 2003 till August 2005, he has worked at the Beckman Institute for Advanced Science and Technology at University of Illinois at Urbana-Champaign as a Postdoctoral Research Assistant, where he conducted research on mechanochemical characterization of self healing polymers. The coupling between the chemical kinetics of polymer undergoing fracture and fatigue were investigated to develop both analytical and numerical models of self-healing polymers. For his Ph.D. dissertation, Dr. Jones worked on experimental and theoretical study of the degradation of polymers at elevated temperature in both uniaxial and multiaxial states of deformation. This involved developing experimental equipment and techniques as well as predictive phenomenological models. Prior to his Ph.D. study, Dr. Jones worked at the Advanced Optics and Materials Laboratory of Texas Instruments/Raytheon T.I. Systems from 1995 till 1998 as a design engineer, where he developed polymer optics for infrared cameras, designed laboratory test fixtures, and transferred technology from laboratory to production scale. Dr. Alan Jones is a member of the American Society of Mechanical Engineers (ASME).

Principal Publications (recent)

Journal Papers

1. Shaw, J.A., Jones, A.S., Wineman, A.S., Chemorheological response of elastomers at elevated temperatures: Experiments and Simulations, *Journal of the Mechanics and Physics of Solids*, 53, 2758-2793, 2005.
2. Jones, A.S., Shaw, J.A., Wineman, A.S., An Experimental Facility to Measure the Chemorheological Response of Inflated Elastomeric Membranes at High Temperature (submitted to *Experimental Mechanics*, 7/2005).
3. Jones, A.S., Rule, J., Moore, J., White, S., Sottos, N, Catalyst Morphology and Dissolution Kinetics for Self-Healing Polymers,(accepted for publication in *Chemistry of Materials*).
4. White, S., Jones, A.S., Sottos, N., Fatigue-Stimulated Healing and Life Extension in Polymers (in preparation for *Nature*).
5. Wineman, A.S., Jones, A.S., Shaw, J.A., Thermo-mechanics of Elastomers Undergoing Scission and Crosslinking at High Temperatures, *Tire Science and Technology*, 31, 69-86, 2003.
6. Wineman, A.S., Jones, A.S., Shaw, J.A., Life-Cycle and durability predictions of elastomeric components, in *Modeling and Simulation-Based Life Cycle Engineering*, (Chong, K.P., Saigal, S., Thynell, S., Morgan, H.S., Editors), New York, 155-169, 2002.

Conference Proceedings

1. Jones, A.S, White, S.R., Sottos, N.R. (2005), *Controlled Kinetics for Optimized Autonomic Crack Healing*, Mechanics and Materials Conference, Baton Rouge, LA.
2. Wineman, A., Shaw, J.A. and Jones, A.S. (2005), *Chemorheological degradation of natural rubber at elevated temperatures: Experiments and simulation*, 76th Annual Meeting of the Society of Rheology, Lubbock, TX.
3. Jones, A.S., White, S.R., Sottos, N.R. (2004) *Effect of Modified Kinetics on Autonomic Crack Healing During Fatigue*, Abstract for the 41st Annual Technical Meeting Society of Engineering Science, Linclon, NE.
4. Shaw, J., Jones, A.S., Wineman, A. (2004) *Chemorheological Degradation of Natural Rubber at Elevated Temperatures: Experiments and Simulation*, Abstract for the 41st Annual Technical Meeting Society of Engineering Science, Lincoln, NE.
5. White, S., Sottos, N., Moore, J., Brown, E., Jones, A., Rule, J. (2004) *Autonomic Healing of Polymers and Composites*, Abstract for the 21st International Congress of Theoretical and Applied Mechanics, Warsaw, Poland.
6. Jones A.S., White, S.R., Sottos, N.R. (2004) *Self-healing Polymer Composites for Extended Fatige Life*, Abstract for the 21st International Congress of Theoretical and Applied Mechanics. Warsaw, Poland.
7. Jones A., Wineman A.S., Shaw J.A. (2002) *An Experimental Study of the Thermo-Mechanical Response of Elastomers Undergoing Scission and Cross*

Linking at High Temperatures, Abstract for the 14th US National Congress of Theoretical and Applied Mechanics. Blacksburg, VA.

8. Wineman, A.S., Jones A., Shaw J.A. (2002) *Thermo-Mechanical Response of Elastomers Undergoing Scission and Cross-Linking at High Temperatures*, Abstract for Euromech Colloquium 438 in Vienna, Austria.

9. Jones A., Wineman A.S., Shaw J.A. (2002) *An Experimental Study of the Thermo-Mechanical Response of Elastomers Undergoing Scission and Cross-Linking at High Temperatures*, Abstract for the 39th Annual Technical Meeting Society of Engineering Science, State College, PA.

Invited Lectures

1. Jones, A.S., White, S.R., Sottos, N.R. (2005), *Optimized Dissolution Kinetics for Self-Healing Polymers*, Invited Lecture, University of Nebraska.
2. Jones, A.S. White, S.R., Sottos, N.R. (2005), *Optimized Dissolution Kinetics for Self-Healing Polymers*, Invited Lecture, Indiana University-Purdue University at Indianapolis.
3. Jones, A.S. (2005) *Adjusted Kinetics for Improved Autonomic Crack Healing During Fatigue*, Invited Lecture, Tulsa University.
4. Jones, A.S. (2005) *Self-Healing Polymer Composites*, Invited Lecture, Louisiana Tech University, Ruston, LA.

Membership in Scientific and Professional Societies

American Society of Mechanical Engineers (ASME).

Significant Professional Service (recent)

Journal Reviews

Acta Materialia.